

B1 3. (Twice Amended - Clean Text) The objective lens according to claim 1, wherein said plano-convex lens is produced by glass molding.

REMARKS

Initially, Applicant would like to express his appreciation to the Examiner for the detailed Official Action provided.

Upon entry of the above amendments, claim 3 will have been amended. Claims 1-7 are currently pending. Applicant respectfully requests entry of the present amendment, reconsideration of the outstanding rejections, and allowance of all the claims pending in the present application.

*Objection to Drawings*

On page 2 of the Official Action, the drawings were objected to under 37 CFR 1.83(a) as not showing every feature of the claimed invention. Specifically, the Examiner takes the position that the glass molding process described in claim 3 should be shown in the drawings.

Applicant respectfully traverses this objection for the reasons set forth below, and requests that it be withdrawn.

Applicant notes that claim 3 sets forth a product-by-process limitation. Applicant submits that only structural features of the product (i.e., the lens) are claimed, not process or manufacturing steps. The Examiner's attention is directed to MPEP 2113 and 2173.05(p) for guidance on the proper interpretation of a product-by-process limitation. Therefore, contrary to the Examiner's position, claim 3 does not require "specific ability/limitations with respect to the manufacturing of the lens". Applicant submits that the structural features of the product which is claimed (i.e., the lens) are shown in the drawings, and that glass molding is neither claimed, nor required to be depicted in the drawings.

However, in order to expedite the prosecution of the present application to issuance, Applicant has hereby amended claim 3 to remove the language directed to the use of a specific molding apparatus (i.e., "with a pair of dies that correspond to said convex and flat surfaces, respectively"). Accordingly, Applicant respectfully submits that the objection to the drawings under 37 CFR 1.83(a) is improper, and requests that it be withdrawn.

*Rejection under 35 U.S.C. § 102(e) based on JP 8-315404*

On page 3 of the Official Action, claim 1 was rejected under 35 U.S.C. § 102(e) as being anticipated by JP 8-315404.

Applicant respectfully traverses the rejection of claim 1 under 35 U.S.C. § 102(e) based on JP 8-315404. Initially, Applicant notes that JP 8-315404 was submitted in the Information Disclosure Statement filed on May 7, 2001, along with its corresponding U.S. Patent No. 5,764,613, and is discussed on page 2 of the present specification.

Claim 1 recites, inter alia, "a single glass plano-convex lens having a rotationally symmetrical convex aspherical surface at the incident side of the parallel light beam and a flat surface at the side of said optical medium, configured to maintain a numerical aperture of at least 0.7."

Applicant submits that JP 8-315404 lacks any teaching of *an objective lens which comprises a single glass plano-convex lens*. JP 8-315404 discloses a multi-lens system which combines a *double convex objective lens* (note element 6) and a *solid immersion lens* (note element 7), rather than a *single lens* objective lens. Further, although SIL 7 is plano-convex, it is clear that there is no disclosure of *a single glass plano-convex objective lens*. Since the reference discloses element 6 to be an objective lens, the Examiner cannot properly consider element 7 to be a *single* objective lens. As discussed on page 2 of the present application, while multi-lens systems such as that disclosed in JP 8-315404 provide the SIL in addition to the objective lens in order to achieve an operable NA, there are inherent problems related to alignment, space requirements and fine actuator capabilities, which are not present with a single lens system. The present

invention achieves the desired NA by providing *a single glass plano-convex objective lens*, thus avoiding the problems of such multi-lens systems.

Applicant further notes that the Examiner has failed to address this lack of *a single glass plano-convex objective lens* in the Official Action, and that the Examiner has no authority to ignore such an express limitation in the claims. Applicant has previously pointed out that this limitation is clearly missing from the applied reference. However, the Examiner's only response was to note that Applicant has not yet perfected his priority claim by filing a verified English translation of Japanese Application No. 2000-029879. However, since the effective date of JP 8-315404 is November 29, 1996, there is no apparent reason for Applicant to file a verified English translation of the priority document at this time. Accordingly, it is respectfully requested that the Examiner inform Applicant where any disclosure of *a single glass plano-convex objective lens* is found in the teachings of JP 8-315404.

Accordingly, Applicant submits that the rejection of claim 1 under 35 U.S.C. § 102(e) based on JP 8-315404 is improper for all of the above reasons. Applicant respectfully requests reconsideration and withdrawal of the rejection, and an early indication of allowance of this claim.

*Rejection under 35 U.S.C. § 102(e) based on Watanabe et al.*

On page 3 of the Official Action, claims 1-3 and 6 were rejected under 35 U.S.C. § 102(e) as being anticipated by WATANABE et al. (U.S. Patent No. 6,320,841). The Examiner has indicated that lens 7 meets the claimed limitations.

Applicant respectfully traverses the rejection of claims 1-3 and 6 under 35 U.S.C. § 102(e) based on WATANABE et al.

↓ Claim 1 recites, inter alia, "a single glass plano-convex lens having a rotationally symmetrical convex aspherical surface at the incident side of the parallel light beam and a flat surface at the side of said optical medium, configured to maintain a numerical aperture of at least 0.7." Not

✓ Applicant submits that WATANABE et al. lacks any teaching of *a single glass plano-convex lens having a rotationally symmetrical convex aspherical surface at the incident side*. Lens 7 of WATANABE et al. is clearly not *plano-convex* since it includes *concave* surface S1. Further, the incident side of lens 7 is clearly not a *rotationally symmetrical convex aspherical surface* since it includes *concave* surface S1.

Applicant also submits that dependent claims 2, 3 and 6, which are at least patentable due to their dependency from claim 1 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record.

Accordingly, Applicant submits that the rejection of claims 1-3 and 6 under 35 U.S.C. § 102(e) based on WATANABE et al. is improper for all of the above reasons. Applicant respectfully requests reconsideration and withdrawal of the rejection, and an early indication of allowance of these claims.

*Rejection under 35 U.S.C. § 102(e) based on Yamamoto et al.* ✓

On page 3 of the Official Action, claims 1-4 and 6 were rejected under 35 U.S.C. § 102(e) as being anticipated by YAMAMOTO et al. (U.S. Patent No. 6,058,095). The Examiner has indicated that lens 4 meets the claimed limitations.

Applicant respectfully traverses the rejection of claims 1-4 and 6 under 35 U.S.C. § 102(e) based on YAMAMOTO et al.

Claim 1 recites, inter alia, "a single glass plano-convex lens having a rotationally symmetrical convex aspherical surface at the incident side of the parallel light beam and a flat surface at the side of said optical medium, configured to maintain a numerical aperture of at least 0.7."

Applicant submits that YAMAMOTO et al. lacks any teaching of ***an objective lens which comprises a single glass plano-convex lens***. YAMAMOTO et al. discloses a ✓  
multi-lens system which combines two lens elements 3 and 4 (note column 10, line 62 through column 11, line 4), rather than a *single lens* objective lens. Further, although lens

4 is plano-convex, it is clear that there is no disclosure of *a single glass plano-convex objective lens*. Since the reference discloses that both elements 3 and 4 constitute the objective lens, the Examiner cannot properly consider element 4 to be a *single* objective lens. Further, the Examiner has no authority to ignore such an express limitation in the claims. As discussed on page 2 of the present application, while multi-lens systems such as that disclosed in YAMAMOTO et al. achieve an operable NA , there are inherent problems related to alignment, space requirements and fine actuator capabilities, which are not present with a single lens system. The present invention achieves the desired NA by providing *a single glass plano-convex objective lens*, thus avoiding the problems of such multi-lens systems. Applicant further notes that the NA and wavefront aberration values disclosed in YAMAMOTO et al. are given for the multi-lens system including lens elements 3 and 4, rather than for *a single glass plano-convex objective lens*. ✓

Applicant also submits that dependent claims 2-4 and 6, which are at least patentable due to their dependency from claim 1 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record.

Accordingly, Applicant submits that the rejection of claims 1-4 and 6 under 35 U.S.C. § 102(e) based on YAMAMOTO et al. is improper for all of the above reasons. Applicant respectfully requests reconsideration and withdrawal of the rejection, and an

early indication of allowance of these claims.

*Rejection under 35 U.S.C. § 103(a) based on either of Watanabe et al. or Yamamoto et al.  
in view of Nakaoki et al.*

On page 4 of the Official Action, claims 5 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over either of WATANABE et al. or YAMAMOTO et al., each in view of NAKAOKI et al. (U.S. Patent No. 5,978,320). The Examiner takes the position that NAKAOKI et al. teaches a magnetic coil arranged on flat surface of an objective lens, and that it would have been obvious to provide such magnetic coils on the objective lenses in the systems of WATANABE et al. or YAMAMOTO et al.

Applicant respectfully traverses the rejections of claims 5 and 7 under 35 U.S.C. § 103(a).

Claim 5 recites, inter alia, "said objective lens comprising a single glass plano-convex lens having a rotationally symmetrical convex aspherical surface at the incident side of the light beam and a flat surface at the side of said optical medium, configured to maintain a numerical aperture of at least 0.7; and a magnetic coil for applying a magnetic field to said optical medium, said magnetic coil being arranged on said flat surface of said objective lens."



While NAKAOKI et al. includes disclosure of a light source and a magnetic coil, it does not disclose the claimed *single glass plano-convex objective lens*, and thus can not possibly cure the deficiencies in the teachings of WATANABE et al. and YAMAMOTO et al., as discussed above. Applicant notes that NAKAOKI et al. achieves a high NA by the use of multiple lenses, in contrast to the *single glass plano-convex objective lens* of the present invention, which avoids the problems of such multi-lens systems which are discussed above. Further, since WATANABE et al. and YAMAMOTO et al. do not teach the claimed objective lens, they can not possibly cure the lack of such an objective lens in the system of NAKAOKI et al.

Applicant also submits that dependent claim 7, which is at least patentable due to its dependency from claim 5 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record.

Accordingly, Applicant submits that the rejections of claims 5 and 7 under 35 U.S.C. § 103(a) are improper for all of the above reasons. Applicant respectfully requests reconsideration and withdrawal of the rejections, and an early indication of allowance of these claims.

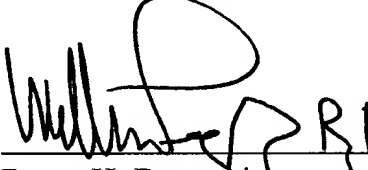
SUMMARY AND CONCLUSION

Entry and consideration of the present amendment, reconsideration of the outstanding Official Action, and allowance of the present application and all of the claims therein are respectfully requested and now believed to be appropriate.

Applicant has made a sincere effort to place the present application in condition for allowance and believes that he has now done so.

Should there be any questions or comments, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,  
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**MARKED UP COPY OF AMENDED CLAIM**

3. (Twice Amended) The objective lens according to claim 1, wherein said plano-convex lens is produced by glass molding [with a pair of dies that correspond to said convex and flat surfaces, respectively].